

**Contents:**

Product Features

Installing Your Modem

Using the AT Command Set

Upgrading your Modem

Modes of Operation

Dialing, Answering, and Hanging Up

Configuring with DIP Switches

Working with Memory

Controlling Result Code Displays

Controlling EIA-232 Signaling

Accessing and Configuring the Courier 56K Business Modem Remotely

Controlling Data Rates

Dial Security

Flow Control

Handshaking, Error

## Courier 56K Business Modem Command Reference

### Alphabetic Command Summary

This appendix contains an alphabetic listing of the AT commands to which the modem will respond. Default settings are **bold**.

- Basic Command Set
- Ampersand (&) Command Set
- Percent (%) Command Set
- Octothorpe (#) Command Set
- Additional V.92 Commands

### Basic Command Set

Command	Function
\$	Display help for the Basic command set.
+++	Escape code. Once your modem is online with another device, the only command it recognises is an escape code of three typed plus signs, which forces the modem back to Command mode. Do the following when issuing the command: 1 Wait 1 second after sending the last item of data. 2 Type +++ 3 Wait 1 second before typing any data. When you type +++, the modem will either hang up or stay on line, depending on how you set S14.
>	Repeat command. If you include the repeat command in the Dial string, the modem will dial the number and wait 60 seconds for a carrier.  If the line is busy, the modem will pause for 2 seconds and then redial. The modem makes a maximum of 10 attempts.
A/	Reexecute the last-issued command. DO NOT type AT or press Enter.
A>	Repeat the last-issued command until canceled by pressing any key. DO NOT type AT or press Enter.
AT	Attention prefix: informs a modem that a command is coming. AT must precede all commands except A/, A>, and +++.
A	Force a modem to answer when it is not receiving an incoming call.
Bn	Set handshaking options.
BO	ITU-T V.25 answer sequence; required to answer all V.34-type and overseas calls.



Control, Data  
Compression, and  
Throughput

Displaying Querying  
and Help Screens

Testing the  
Connection

Dedicated/Lease  
Line and  
Synchronous  
Applications

Troubleshooting

## Appendices

S-Registers

Alphabetic  
Command Summary

Flow Control  
Template

Result Code  
Meanings and Sets

Technical  
Information

V.25 bis Reference

ASCII Chart

Fax Information for  
Programmers

Viewing LEDs

Regulatory  
Information and  
Limited Warranty

Glossary

	B1	Bell answer tone. This setting selects HST modulation, but use it only if the modem is not required to answer V.34-type calls.
Cn	Enable or disable the transmitter.	
	C0	Transmitter disabled; for receiving only.
	<b>C1</b>	Transmitter enabled.
<i>With the exception of the Dial options, modem ignores any commands issued after D in the same command string.</i>		
Dn	Dial a phone number and issue other optional commands. The numbers 0-9 are accepted. The maximum number of characters allowed is 36, including the AT prefix, punctuation, and spaces.	
<b>Optional parameters:</b>		
P	Dial using pulses.	
T	Dial using tones.	
,	(Comma) Pause for 2 seconds (or the time in S-Register 8).	
;	(Semicolon) Remain in Command mode after dialing.	
"	Dial the letters that follow. Example, ATDT1800"DIAL USR" same as ATDT18002425877.	
W	Wait for a second dial tone before continuing to dial (with X3 or higher).	
@	Wait for an answer (with X3, X4, or X7).	
/	Pause for 125 milliseconds.	
R	Reverse frequencies. Use this command when calling an originate-only modem. It forces the modem to dial out at the answer frequency.	
!	Flash the switchhook (off hook 0.5 seconds, on hook 0.5 seconds, then off hook). Use ! when other modems share the line.	
L?	Display the last-dialed number.	
L	Dial the last-dialed number.	
Sn	Dial the number stored in memory at position n, where n = 0-79. Store the number in memory using the &Z command.	
\$	Display help for the dial commands. ATD\$	
En	Command mode echo. Enables or disables the display of your typed commands.	
	E0	Command mode echo OFF. Your typing will not appear on the screen.
	<b>E1</b>	Command mode echo ON. Your typing will appear on the screen.
<i>If double characters appear on the screen, both the modem's local echo and your software's local echo are on.</i>		
Fn	Online local echo. If ON, a modem displays on your screen the data that it is transmitting to another modem.	
	F0	Online echo ON. (Sometimes called half duplex.)
	<b>F1</b>	Online echo OFF. (Sometimes called full duplex.)
Hn	Go on or off hook.	
	H0	Go on hook (hang up).
	H1	Go off hook (pick up).
In	Query the modem.	
	I0	Displays the product code.
	I1	Displays checksum.
	I2	Displays RAM TEST.



	I3	Displays the banner (product name).
	I4	Display current modem settings.
	I5	Display settings stored in NVRAM.
	I6	Display statistics for the last call.
	I7	Display product configuration.
	I8	Lists phone numbers with redial restrictions.
	I9	Displays modem's Plug and Play ID.
	I10	Display dial security account status information.
	I11	Display link diagnostics report.
	I15	Display caller ID information.
	I16	Display channel probe report.
	I17	Display training signature report.
Kn		Control the modem clock. ATI6 displays the time.
	<b>K0</b>	If online, display current call duration. If offline, display last call's duration.
	<b>K1</b>	Display the actual time. Set the clock using ATI3=HH:MM:SS K1.
Ln		Internal modems only: Controls the speaker's volume.
	<b>L0</b>	Quietest
	<b>L1</b>	Low
	<b>L2</b>	Medium
	<b>L3</b>	Loudest
Mn		Control when the speaker sounds
	<b>M0</b>	The speaker is always off.
	<b>M1</b>	The speaker is on until the call is negotiated.
	<b>M2</b>	The speaker is always on.
	<b>M3</b>	The speaker turns on after the last digit is dialed and stays on until the call is negotiated.
On		Return online. Use with the escape code (++) to toggle between command and online modes.
	<b>O0</b>	Return online (normal).
	<b>O1</b>	Return online and retrain. Use O1 if there were errors in a non-ARQ data transfer.
	<b>O2</b>	Return online and speed shift.
Qn		Enable or disable the display of result codes.
	<b>Q0</b>	Display result codes.
	<b>Q1</b>	Suppress result codes (quiet).
	<b>Q2</b>	Suppress result codes when answering.
S\$		Display help screens for the S-Registers.
Sr=n		Set S-Register value: r is any S-Register; n must be a decimal number between 0 and 255.
Sr.b=n		Set a bit-mapped register: r is the S-register, b is the bit, and n is 0 (off) or 1 (on).
Sr?		Query contents of S-register r.
Refer to the S-Registers chapter of the Appendixes section for a listing of all the S-Registers.		
Vn		Display result codes in words or numbers.
	<b>V0</b>	Display result codes in numeric form.
	<b>V1</b>	Display result codes in verbal form.
		Control the amount of information displayed in the result codes. The default is X7 (all codes except 12/VOICE). The modem doesn't



	try to detect signals if it isn't set to report them.
Xn	For result codes in synchronous operations, refer to the Dedicated/Lease Line and Synchronous Applications chapter of the Contents section. For more detailed information, refer to the Result Code Meanings and Sets chapter of the Appendices section.
	X3 Ignore Dial Tone
	X4 Microsoft default
	X7 Courier 56K Business Modem default
Z	Software reset. If DIP Switch 10 is OFF (factory setting), revert to the settings in NVRAM. If DIP switch 10 is ON, reset to the &F0 configuration template (no flow control).
Z!	Complete hardware reset

## Ampersand (&) Command Set

Command	Function	
&\$	Display help for the ampersand (&) command set.	
&An	Enable or disable the display of additional result code subsets. (Also, see the Xn command.)	
	&A0	Do not display ARQ result codes.
	&A1	Display ARQ result codes.
	&A2	In addition to ARQ result codes, display HST, V.32, V.FC, V.34, V.90, or V.92 modulation indicator.
	<b>&amp;A3</b>	In addition to ARQ and modulation indicators, display an error control indicator (LAPM, HST, MNP, SYNC, or NONE) and a data compression type (V42 bis or MNP5).
&Bn	Set the serial port rate to variable or fixed.	
	&B0	Variable: The serial port rate adapts to match the speed of the connection.
	<b>&amp;B1</b>	Fixed: The modem always communicates with your computer at the rate at which you have set, regardless of the connection rate.
	&B2	When answering calls, use the fixed rate for ARQ calls and variable rates for non-ARQ calls.
<i>The serial port rate should be equal to or higher than the &amp;Nn rate.</i>		
&Cn	Controls how the modem sends a Carrier Detect (CD) signal to your computer.	
	&C0	CD always ON, even if the modem is not on line.
	<b>&amp;C1</b>	Normal operations. The modem sends a CD signal when it connects with another modem and drops the CD when it disconnects.
&Dn	Control how the modem responds to Data Terminal Ready (DTR) signals.	
	&D0	DTR is always ON (ignored).
		If issued before connecting with another device, the



		Courier 56K Business Modem can enter online Command mode during a call by dropping DTR.
	<b>&amp;D1</b>	&D1 functions similarly to the escape code (+++).  Return online with the On command, or hang up with the Hn command.
	<b>&amp;D2</b>	Normal DTR operations. The modem will not accept commands unless your computer sends a DTR signal. Dropping DTR ends a call.
	<b>&amp;D3</b>	Modem resets with DTR toggle.
		Load one of the three configuration templates that are stored permanently in read-only memory. Refer to the Flow Control Template chapter of the Appendixes section for the settings for each template.
	<b>&amp;Fn</b>	To load a template into current memory, enter AT&Fn. To write a template to NVRAM, enter AT&Fn&W.  If DIP switch 1 is OFF, &F0 is always loaded into memory at power-on or reset.
	<b>&amp;F0</b>	Load No Flow Control template settings.
	<b>&amp;F1</b>	Load Hardware Flow Control template settings.
	<b>&amp;F2</b>	Load Software Flow Control template settings.
	<b>&amp;Gn</b>	Set guard tones for international calls.
	<b>&amp;G0</b>	No guard tone. Use this in the United States and Canada.
	<b>&amp;G1</b>	This sets a 550 Hz guard tone, and is used in some European countries.
	<b>&amp;G2</b>	This sets an 1800 Hz guard tone, and is used in the U.K. and some Commonwealth countries. &G2 requires the B0 setting.
	<b>&amp;Hn</b>	Transmit data flow control. Prevents the modem's buffer for data transmitted to the modem by its attached computer from overflowing.
	<b>&amp;H0</b>	Disable transmit data flow control.
	<b>&amp;H1</b>	Use hardware flow control. Requires that your computer and software support Clear to Send (CTS) at the EIA-232 interface.
	<b>&amp;H2</b>	Use software flow control. Requires that your software support XON/XOFF signaling.
	<b>&amp;H3</b>	Use both hardware and software flow control. If you are unsure about what your equipment supports, select this option.
	<b>&amp;In</b>	Received data software flow (XON/OFF) control.
	<b>&amp;I0</b>	Disables XON/XOFF flow control of received data.
	<b>&amp;I1</b>	The modem acts on your typed XON/XOFF commands, Ctrl-S or Ctrl-Q, and passes them to the remote device.
	<b>&amp;I2</b>	The modem acts on your XON/XOFF commands, but removes them from the data stream instead of passing them to the remote device. This is the recommended setting for ARQ mode.
	<b>&amp;I3</b>	Hewlett Packard-Host mode. Applies only to modems attached to an HP mainframe that uses the ENQ/ACK protocol. Use in ARQ mode only.
	<b>&amp;I4</b>	Hewlett Packard-Terminal mode. Applies only to modems attached to terminals in an HP system that



		uses the ENQ/ACK protocol. Use in ARQ mode only.
	<b>&amp;I5</b>	This setting is designed to enable flow control on the phone link when the connection is not under error control. For this to work, the remote device must have &I5 capability.
<b>&amp;Kn</b>	Enable or disable data compression.	
	<b>&amp;K0</b>	Disable data compression.
	<b>&amp;K1</b>	Use auto-enable/disable. The modem enables compression if the serial port rate is fixed (&B1) and disables compression if the serial port rate follows the connection rate (&B0) because compression offers no throughput advantage when the serial port and connection rates are equal; in fact, compression may degrade throughput.
	<b>&amp;K2</b>	Always enable data compression.
	<b>&amp;K3</b>	Selective data compression. The modem negotiates only for V.42 bis compression, and disables MNP Level 5 (MNP5) compression. Use this setting to transfer compressed files.
<b>&amp;Ln</b>	Line type.	
	<b>&amp;L0</b>	Normal.
	<b>&amp;L1</b>	Dedicated or leased line. This refers to a special kind of phone line (at extra cost); not just a phone used only for a modem.
<b>&amp;Mn</b>	Enable ARQ (error control) or synchronous protocols. Both your modem and the remote device must use the same protocol.	
	<b>&amp;M0</b>	Normal mode, no error control. Due to the nature of phone line channels, this is never recommended for calls above 2400 bps.
	<b>&amp;M1</b>	Use for online synchronous mode without V.25 bis. This setting is exclusive of the modems' error control.
	<b>&amp;M4</b>	Normal/ARQ mode. If an ARQ connection isn't made, the modem operates in Normal mode as though it were set to &M0.
	<b>&amp;M5</b>	ARQ asynchronous mode. The modem hangs up if an ARQ connection cannot be made.
	<b>&amp;M6</b>	V.25 bis synchronous mode using a character-oriented link protocol similar to BISYNC.
	<b>&amp;M7</b>	V.25 bis synchronous mode using the HDLC link protocol.
<b>&amp;Nn</b>	Sets highest fixed link speed.	
<b>&amp;Un</b>	Sets lowest fixed link speed.	
	<b>n=0</b>	Variable rate. The modem negotiates with the remote device for the highest possible connection rate, depending on the capabilities of the remote device.
	<b>n=1-38</b>	Fixed rate. The modem connects only if the remote device is operating at the same rate or higher.  The connection rate should be lower than or equal to the serial port rate.
	<b>n=1</b>	300 bps
	<b>n=2</b>	1200 bps
	<b>n=3</b>	2400 bps
	<b>n=4</b>	4800 bps
	<b>n=5</b>	7200 bps
	<b>n=6</b>	9600 bps
	<b>n=7</b>	12000 bps
	<b>n=8</b>	14400 bps



		n=9	16800 bps
		n=10	19200 bps
		n=11	21600 bps
		n=12	24000 bps
		n=13	26400 bps
		n=14	28800 bps
		n=15	31200 bps
		n=16	33600 bps
		n=17	28000 bps
		n=18	29333 bps
		n=19	30666 bps
		n=20	32000 bps
		n=21	33333 bps
		n=22	34666 bps
		n=23	36000 bps
		n=24	37333 bps
		n=25	38666 bps
		n=26	40000 bps
		n=27	41333 bps
		n=28	42666 bps
		n=29	44000 bps
		n=30	45333 bps
		n=31	46666 bps
		n=32	48000 bps
		n=33	49333 bps
		n=34	50666 bps
		n=35	52000 bps
		n=36	53333 bps
		n=37	54666 bps
		n=38	56000 bps
<b>&amp;P</b>		Enable pulse dial.	
		n=0	Pulse dial enabled
		n=1	Austria, Czechoslovakia, Denmark, Finland, Germany, Italy, Netherlands, South Africa (Second option for Asia, France, Korea, Norway, South Africa)
		n=2	Australia, Asia, Belgium, France, Ireland, Korea, Portugal, South Africa, Spain
		n=3	Norway
		n=5	Japan
		n=6	Sweden
		n=7	(Second option for Australia)
<b>&amp;Rn</b>		Received data (RTS) hardware flow control.	
		&R0	Delay Clear to Send (CTS) response after Request to Send (RTS).
		&R1	Ignore RTS. This setting is required if your computer or terminal or software does not support RTS.
		<b>&amp;R2</b>	Enable hardware flow control of received data. The modem sends data to the computer only upon receipt of the RTS signal.
<b>&amp;Sn</b>		Send the computer a Data Set Ready (DSR) signal via the EIA-232 interface.	



	<b>&amp;S0</b>	DSR is always ON (override).
	<b>&amp;S1</b>	In Originate mode: Send DSR after dialing, on detection of the remote device's answer tone. In Answer mode: Send DSR after sending an answer tone.
	<b>&amp;S2</b>	When Carrier is lost, send a pulsed DSR signal with Clear to Send (CTS) following Carrier Detect (CD). This option is for specialised equipment such as automatic callback units.
	<b>&amp;S3</b>	Same as &S2, but without the CTS signal.
	<b>&amp;S4</b>	Send the computer DSR at the same time as CD.
	<b>&amp;S5</b>	Send DSR normally, and follow CTS with CD.
	<b>&amp;Tn</b>	Test the modem.
	<b>&amp;T0</b>	End testing.
	<b>&amp;T1</b>	Local analogue loopback
	<b>&amp;T2</b>	Local digital loopback
	<b>&amp;T4</b>	Grant Remote Digital Loopback request
	<b>&amp;T5</b>	Deny Remote Digital Loopback request
	<b>&amp;T6</b>	Request Remote Digital Loopback
	<b>&amp;T8</b>	Local analogue loopback with test pattern
	<b>&amp;T9</b>	Local digital loopback with test pattern
	<b>&amp;W</b>	Write the current settings to NVRAM.
	<b>&amp;Xn</b>	External modems only: Designate the source of synchronous transmit clock timing signals.
	<b>&amp;X0</b>	The Courier 56K Business Modem sends transmit clock timing signals to the DTE over the serial interface. DTE rate follows the connection rate.
	<b>&amp;X1</b>	The DTE sends transmit clock timing signals to the modem over the serial interface. Typical use: multiplexed leased lines.
	<b>&amp;X2</b>	The Courier 56K Business Modem sends receiver clock timing signals, which are looped to the transmit clock and sent to the DTE over the serial interface. Typical Use: Systems that require synchronisation of data flowing in both directions.
	<b>&amp;Yn</b>	Break handling. This command lets you send a break to stop data transfer without disconnecting.
	<b>&amp;Y0</b>	Destructive, don't send break.
	<b>&amp;Y1</b>	Destructive, expedited.
	<b>&amp;Y2</b>	Nondestructive, expedited.
	<b>&amp;Y3</b>	Nondestructive, unexpedited; the modem sends a break-in-sequence with data received from your computer or terminal.
	<p><i>If the call is under data compression, destructive breaks cause both modems to reset their data compression tables. When transmission resumes, the modems build new tables, and the result is temporary lower-than-normal throughput.</i></p>	
	<b>&amp;Zn=s</b>	Store up to 79 numbers in NVRAM, where n is the position 0-79 in NVRAM, and s is the phone number string. The number string may be up to 36 characters long, including any Dial command options.
	<p><b>Example:</b> AT&amp;Z2=555-6789</p> <p>In the following example, &amp;M0 (no error control) is inserted before the Dial command. Example: AT&amp;M0 DS2</p>	
	<p><i>This command functions differently when Dial Security is enabled. Also, do not include modem settings in the &amp;Zn string. If the call requires a special</i></p>	



<i>setting, insert it in the command string before the DSn command.</i>	
&Zn=L	Stores the last-dialed number in position n.
&Zn?	Display the phone number stored in NVRAM at position n (where n = 0-9).
&ZC=s	Store command string s in NVRAM. The command string can be up to 30 characters long; spaced do not count. This command is used so you can call another modem without loading your communications software.
&ZC?	Display the stored command string.

## Percent (%) Command Set

Command	Function
%%	Display the help panels for the percent (%) command set.
%An	Create and configure security accounts.
%Bn	Remotely configure a modem's serial port rate.
	%B0 110 bps
	%B1 300 bps
	%B2 600 bps
	%B3 1200 bps
	%B4 2400 bps
	%B5 4800 bps
	%B6 9600 bps
	%B7 19200 bps
	%B8 38400 bps
	%B9 57600 bps
	%B10 76800 bps
	%B11 115200 bps
	%B12 230400 bps
%Cn	Remote configuration control.
	%C0 Defer configuration changes until the call is ended. Changes take effect for ensuing connections.
	%C1 Cancel configuration changes and restore the original configuration.
<i>Using %C1 will not reverse any changes that you wrote to NVRAM (with &amp;W) or forced (with %C2).</i>	
	%C2 Force configuration changes to take effect immediately.
<i>We recommend against forcing configuration changes unless it is absolutely necessary. An unreliable connection, or loss of connection, may result.</i>	
%D=	Set a DTMF password.
%E=n	Erase security settings.
	%E=1 Erase local-access password.
	%E=2 Erase Autopass password.
	%E=3 Erase passwords in accounts 0-79.
	%E=4 Erase phone numbers in accounts 0-79.



	%E=5	Disable Account, Dialback, and New Number fields in accounts 0-79.
%Fn		Remotely configure another device's data format.
	%F0	No parity, 8 data bits.
	%F1	Mark parity, 7 data bits.
	%F2	Odd parity, 7 data bits.
	%F3	Even parity, 7 data bits.
%L=		Set a local-access password.
%Nn		Set the offline clock speed for synchronous mode.
	%N0	Reserved
	%N1	Reserved
	%N2	1200 bps
	%N3	2400 bps
	%N4	4800 bps
	%N5	7200 bps
	%N6	9600 bps
	%N7	12000 bps
	%N8	14400 bps
	%N9	16800 bps
	%N10	19200 bps
%Pn=		Disable password security (n=0 or n=1) when no character follows the equal sign.
%Pn=s		Set the following password (s) for viewing privileges only (n = 0), or view and configuration privileges (n= 1).
%Pn?		Display password n.
%S=n		Access the security accounts. Does not disable security.
%T		Enable the recognition of tone frequencies of analogue dialing devices.%T is meant primarily for use with network applications, but may also be integrated into certain software programs. For example, %T could be used in a security program to identify incoming tone security codes.
		To return the modem to Command mode, press any key or drop the computer's or terminal's DTR signal. The modem responds OK.
%V=PWn		Assign the password in account n in your modem's security account as your Autopass password

## Octothorpe (#) Command Set

Command	Function
##	Display the help panels for the octothorpe (#) command set.
#CID=n	Controls the caller ID settings.
	#CID=0 Disable caller ID detection and reporting.



	#CID=1	Enable caller ID with formatted output.
	#CID=2	Enable caller ID with unformatted output.
	#CID=3	Enable caller ID with formatted output and name suppressed.
	#CID=4	Enable caller ID but do not transmit the information to your computer- retain it in the modem's memory.
	#CID?	Display the current caller ID settings.
	#CID=?	Display the caller ID actions that are available.

## +p Command Set (V.92 Commands)

Command	Function
+p\$	Display the help panels for the +p command set.
+pBI=n	Controls the upstream/downstream bias.
	+pBI=0 Biased Upstream
	+pBI=1 Balanced Upstream and Downstream
	+pBI=2 Biased Downstream
+pCW=n	Controls call waiting.
	+pCW=0 Process call waiting
	+pCW=1 Disconnect on call waiting
	+pCW=2 Ignore call waiting
+pIG=n	Controls PCM upstream.
	+pIG=0 Enable PCM upstream
	+pIG=1 Disable PCM upstream
+pMH=n	Controls Modem on Hold.
	+pMH=0 Enable Modem on Hold
	+pMH=1 Disable Modem on Hold
+pMHR	Request Modem on Hold.
+pMHT?	Display Modem on Hold timeout.
+pQC=n	Controls phases of QC.
	+pQC=0 Enable phase 1 and phase 2 of QC
	+pQC=1 Disable phase 1 and enable phase 2 of QC
	+pQC=2 Enable phase 1 and disable phase 2 of QC
	+pQC=3 Disable phase 1 and phase 2 of QC
+pSS=n	Controls short sequences.
	+pSS=0 Modem decides on short sequences
	+pSS=1 Short sequence as per +QC

